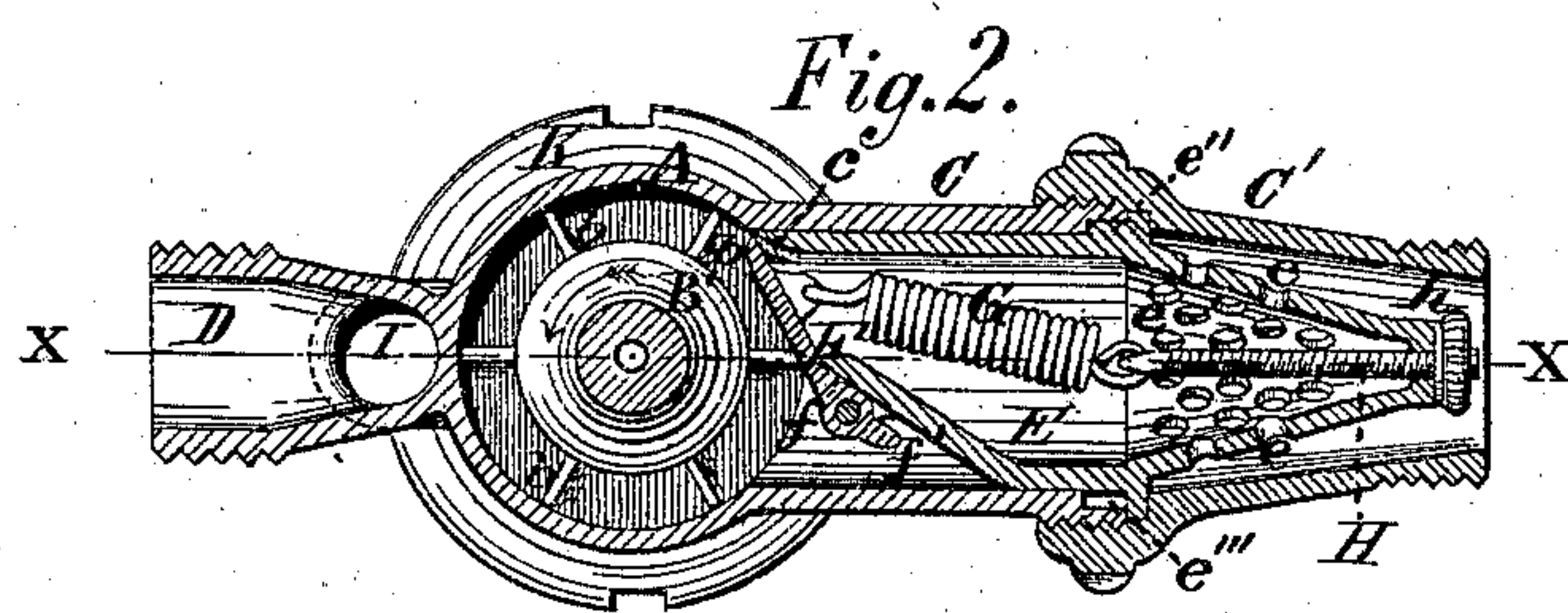
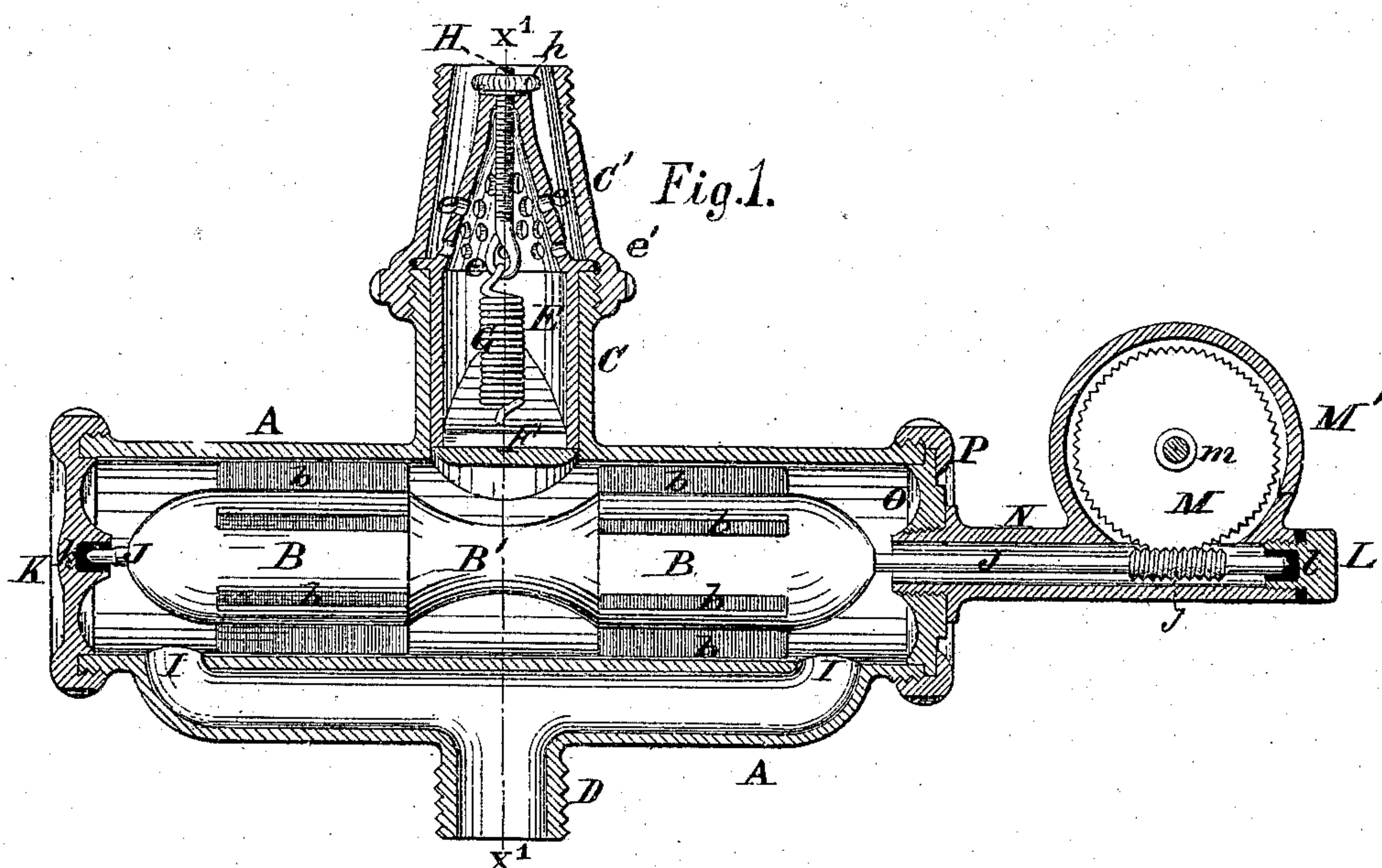


A. M. ROUSE.
Water-Meters.

No. 138,697.

Patented May 6, 1873.



WITNESSES:

Walter Allen
W. H. Pearce

INVENTOR:

Albion M. Rouse
By Knights & Co.
Atty

UNITED STATES PATENT OFFICE.

ALBION M. ROUSE, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF HIS
RIGHT TO PETER E. BLAND, OF SAME PLACE.

IMPROVEMENT IN WATER-METERS.

Specification forming part of Letters Patent No. **138,697**, dated May 6, 1873; application filed
December 11, 1872.

To all whom it may concern:

Be it known that I, ALBION M. ROUSE, of the city and county of St. Louis, and State of Missouri, have invented certain Improvements in Water-Meters, of which the following is a specification:

The first part of my invention relates to a device to cause the water-flow to be correctly registered, whether small or great in quantity; and consists of a case which is inserted in the water-way, and which has a spring-valve that opens more or less, according to the water-flow, the valve being so inclined as to deflect the current to the periphery of the chamber containing the bucket-wheel, so that whatever may be the size or quantity of the water-current, it will impart to the water in the bucket-wheel case a rotary motion. The second part of my invention consists in combining with the aforesaid case a valve having a small water-passage between the valve and its seat, said passage being tangential to the periphery of the bucket-wheel chamber, so that if there is a small leak in the hydrant it will be registered, owing to the small current acting in an effective manner upon the water in said chamber by impinging upon the periphery of the same. The third part of my invention relates to the combination, with the aforesaid case and valve, of a bucket-wheel whose midlength or waist is made of smaller diameter than the portions of the hub upon either side of it, and carries no buckets. The object of this construction of wheel is to enable the entering current of water to impart to the water in the wheel-case a rotary motion, which is communicated to the wheel by means of buckets at each side of such reduced part of the hub. The fourth part of my invention consists in the manner of securing the register-gear case to the bucket-wheel case. The register-gear case is attached to a disk that fits, with a water-tight joint, the end of the bucket-wheel case, and is secured thereto by a coupling-nut, so that the disk admits of being turned on the bucket-wheel case to adjust the case of the register to any position, irrespective of the position of the bucket-wheel case.

In the drawing, Figure 1 is a horizontal lon-

gitudinal section at the line X X. Fig. 2 is a vertical transverse section at the line X' X'.

A is the case of the bucket-wheel B. C is the inflow, and D the outflow, pipe. In the pipe C is inserted a case, E, whose conical end has a number of small orifices, *e*, for the entrance of water. The case E is inserted in the pipe C close to the bucket-wheel case, and has a shoulder or flange, *e'*, which fits against the end of the pipe C, and is held thereto by a coupling-nut, C', which connects with the water-supply pipe. At the inner end of the case E is an inclined valve, F, that fits the semi-circular mouth of the same, and is hinged at *f*. The valve is held shut when there is little or no flow of water, by a spring, G, whose tension is adjusted by a screw-rod, H, (to which the spring is attached,) and a nut, *h*, screwing on the rod and resting against the conical end of the case E. At the upper end of the valve F is a narrow orifice, *c*, which remains open when the valve is closed, so that if there is any small leak in the hydrant, it will be fed through such orifice. This orifice is tangential to the periphery of the bucket-wheel chamber, so that a very small current of water through the orifice will impart rotary motion to the water in the chamber, and consequently to the wheel B. When the cock of the hydrant is opened, the valve F springs open sufficiently to supply the pipe with a full stream, but let the flow through the valve-port be smaller or greater, it is always directed to the periphery of the bucket-wheel chamber, and causes the rotation of the water therein. *f'* is a stop-lug on the valve F, to prevent it from opening too far. *e''* is a feather-key or lug, which enters a seat, *e'''*, at the bottom or top of the pipe C, to hold the case E in the proper position for the water-current to cause the rotation of the wheel B in either direction desired. The case A has a central orifice where the pipe C enters it, and two outlets, I, communicating with the pipe D. The wheel B has smaller diameter at the waist B' than upon each side, as shown, and carries no buckets; the object being to interpose no obstacle to the rotary motion of the water at this place, the said motion being communicated by the tangential current of

water through the port of the valve F, and the momentum of the water being imparted to the wheel by means of the buckets *b*, which are radial to the hub of the wheel, and parallel with the same and its shaft J. The shaft J has journal-bearings *k l*, of hard rubber, occupying recesses in the caps K L, screwed on the opposite ends of the meter. The shaft J has a screw-gear, *j*, which engages a screw-gear wheel, M, upon whose shaft *m* is the first wheel of the register. (The register-gear is not shown, as any form of the same may be used, and no claim is made thereon.) The cap L screws into the end of the pipe N, through which the shaft J passes axially. The pipe N screws into a disk, O, which has a water-tight joint with the end of the case A, and is coupled thereto by a coupler-nut P. The cap K screws on the opposite end of the case A to the nut P. The disk O (after loosening the nut P) may be turned with the register-gear case M', so as to adjust the register to any desired position, whether the water-pipes C D are laid horizontal, as shown, or placed in a vertical or inclined position.

The object accomplished by making the central part B' of the hub of reduced diameter, and devoid of buckets is, to allow the lodgment there of a body of water, to which a rotary movement may be readily imparted by the stream flowing through the case E and valve-port. If the buckets *b* were carried from end to end of the hub, the power of the entering current would be insufficient to over-

come the inertia of the whole body of water and the wheel until a quantity of it had escaped longitudinally between the buckets; but with my device the entering current acts on the periphery of the body of water around the waist B', and as there is no impediment to the rotation at that place, considerable momentum is acquired, and the wheel has rotary motion imparted to it, even though the size and power of the entering current is exceedingly small. The smaller the entering current is, the nearer it is to a tangential direction to the periphery of the water-chamber of the case A, so that if there is but a small leak in the hydrant, the amount of water will be fully registered, as I have fully verified by experiment.

I claim as my invention—

1. The case E, for insertion in the feed-pipe of a rotary meter, and provided with a spring-valve, F G, substantially as set forth.

2. In combination with the case E, the valve F, when the same is provided with an orifice, *c*, substantially as and for the purpose set forth.

3. The wheel B having a reduced waist, B', devoid of buckets, in combination with the valve F, as and for the purpose set forth.

4. The register M', secured to the case A by means of the disk O and nut P, to allow the adjustment of the register on the case A, substantially as set forth.

ALBION M. ROUSE.

Witnesses:

SAML. KNIGHT,
ROBERT BURNS.